REMARKS

I. Introduction

In response to the Office Action dated May 17, 2004, claims 8-10, 42-43, and 76-77 have been cancelled and claims 1, 2, 5, 14, 16, 35, 36, 39, 44, 48, 50, 69, 70, 73, 78, 82, and 84 have been amended. Claims 1-7, 11-41, 44-75, and 78-102 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Allowable Subject Matter

Claims 10, 16, 23, 33, 44, 50, 57, 67, 78, 84, 91, and 101 are merely objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants have amended claims 1, 35, and 69 to incorporate the allowed subject matter. Accordingly, Applicants submit that the claims are now in allowable form.

III. Non-Art Objections

In paragraphs (1)-(2) of the Office Action, the abstract and disclosure were objected to for various informalities.

Applicants have amended the abstract and specification to overcome these objections.

IV. Prior Art Rejections

In paragraphs (3)-(4) of the Office Action, claims 1-4, 11-15, 17022, 24-32, 34, 35-38, 45-49, 51-56, 58-66, 68, 69-72, 79-83, 85-90, and 92-100, and 102 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zuffante et al., U.S. Patent No. 6,219,049 (Zuffante). In paragraph (5) of the Office Action, claims 5-9, 39-43, and 73-77 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zuffante as applied to claim 1, and further in view of Harrison et al., U.S. Patent No. 6,611,725 (Harrison). However, in paragraphs (6) of the Office Action, claims 10, 16, 23, 33, 44, 50, 57, 67, 78, 84, 91, and 101 were indicated as being allowable if rewritten in independent form to include the base claim and any intervening claims.

Applicants acknowledge the indication of allowable claims. In this regard (as indicated above), Applicants have amended claims 1, 35, and 69 to incorporate the allowable subject matter.

Nonetheless, Applicants have also amended claims 2, 26, and 70 into independent form and traverses the rejections of these claims.

Specifically, claims 2, 36, and 70 were rejected as follows:

> As per claim 2, which is dependent on claim 1, the modified Zuffante teaches selecting a command to place the first component in a display window (column 19, lines 7-18); automatically placing the first component in the display window without further user interaction based on the settings of the first constraint interface (column 19, lines 7-18).
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> Claims 35-38, 45-49, 51-56, 58-66, 68, 69-72, 79-83, 85-90, 92-100, and 102 are similar in scope to claims 1-4, 11-13, 15, 17-19, 21-22, and 24-34, respectively, and are therefore rejected under similar rationale.

Applicants traverse the above rejections for one or more of the following reasons:

(1) Neither Zuffante nor Harrison teach, disclose or suggest the automatic placement of a component in a display without user interaction; and

(2) Neither Zuffante nor Harrison teach, disclose or suggest such automatic placement merely by selecting the component.

Independent claims 2, 36, and 70 are generally directed to the creation of a constraint on a component and the automatic placement of the component in an assembly using the constraint. As claimed, first the constraint is created for the component. Thereafter, the user selects a command to place the first component in a display window (e.g., an assembly) merely by selecting the first component. Such component selection is followed by an automatic placement of the component (based on the settings of the constraint) without any further user interaction. Neither Zuffante nor Harrison teach, disclose, or suggest, implicitly or explicitly, such claim limitations.

In rejecting these claims, the Office Action relies on column 19, lines 7-18 which provides:

> Once the component has been selected by clicking the mouse 34, or by other conventional means, the component maybe moved by dragging the mouse 34. As the component is moved near other components, such as the hole 400 of FIG. 29, the system automatically determines what set of mates, or geometric constraints, could be established between the geometries of the components that are in proximity to each other. The system dynamically makes this determination of potential mates between components in real time as the user drags the component.

As can be seen in this text, the automatic determination relates to the particular set of mates that could be established between the geometries of the components. Further, as part of making this automatic determination, the user is dragging the component with a mouse. Thus, instead of merely selecting a component thereby resulting the automatic placement of the component in accordance with a constraint (as claimed), Zuffante requires a user to drag a component around a

screen thereby automatically determining a set of mates that can be established. Accordingly, Zuffante's dragging consists of considerable additional user interaction – something that cannot be performed in accordance with the claims. Further, the claims provide for automatic placement and not the automatic determination of constraints when dragging. These differences clearly establish that the present claims are nonobvious in view of Zuffante.

Dependent claim 3 adds the further limitation that the automatic placement is enabled through a selectable option in a dialog window. In rejecting this claim, the Office Action merely relies on obviousness in Zuffante's teaching the enabling or disabling of features in a design program. However, such a teaching does not and cannot render this specifically claimed limitation obvious. Setting values in a dialog window is well known in the art. This claim provides for a specific type of setting – whether a component may be automatically placed. Such an automatic placement setting is not disclosed anywhere in Zuffante or the prior art. Such a capability does provide increased flexibility but was not done (nor was it even contemplated) before the present invention. The ability to merely select an object and have that object be placed in a drawing automatically if a particular setting provides for such automatic placement is a unique attribute that provides many advantages over the prior art.

Dependent claim 5 provides for displaying a glyph near a first geometric characteristic in a graphical display of the first geometric characteristic. The glyph indicates the existence of the first constraint interface. In rejecting this claim, the Office Action relies on Harrison col. 7-8, lines 52-12. This portion of Harrison, as stated in the Office Action, merely provides for displaying supplementary data associated with an object. However, displaying supplementary information is not even remotely similar to displaying a glyph that indicates the existence of a constraint interface. Further, the glyph is displayed in the graphical display of the geometric characteristic. Neither Zuffante nor Harrison even remotely describe such a glyph display.

Dependent claim 11 provides for displaying an icon in the dialog window (that is used to specify settings for the constraint) that graphically depicts a mating property. In rejecting this claim, the Office Action relies on figure 30, element 403 mateGroup1. Firstly, the mateGroup1 icon is not displayed in a dialog window. Instead, it is displayed in a graphical browser portion that lists the components. Secondly, there is no indication, implicit or explicit, that the mateGroup1 icon graphically depicts a mating property. Instead, the icon merely looks like a paperclip. A paper clip

does not graphically depict a mating property at all. Accordingly, Applicants submit that Zuffante fails to teach, disclose, or suggest, the limitations set forth in this claim.

Claim 12 further provides that the icons are displayed as selectable buttons. Again, the Office Action relies on figure 30, element 403. However, none of the icons in that group appear as selectable buttons at all. Instead, the mateGroup1 provides icons that is merely a picture/glyph of a paperclip and is not a button, nor is the paperclip selectable.

Claim 14 sets forth specific types of constraint interfaces such as mate, angle, tangent, insert, rotation-rotation, rotation-translation or translation-translation. In rejecting this claim the Office Action relies on col. 20, lines 1-14. This portion of Zuffante merely provides for a head above a surface of a hole, or with the head flush with the planar surface at the top of the hole. The portion also provides that a user can select between different possible mating scenarios. However, none of the specifically claimed types of constraint interfaces are even alluded to in this portion (or the remainder) of Zuffante.

Claim 21 provides the ability to create a composite constraint interface by selecting a first constraint interface and one or more additional constraint interfaces. Thereafter, the user selects an option to create the composite constraint interface (e.g., consisting of the first constraint interface and the additional constraint interfaces). In rejecting this claim, the Office Action relies on col. 19, lines 32-40. However, this portion of Zuffante does not teach nor suggest the selection of constraints at all. Nor does this portion teach or suggest the creation of a single composite constraint interface. Instead, the cited portion merely describes dragging a feature, a system determining a characteristic set of geometries to be mated, and dynamically displaying a mated feature. However, the creation of a composite interface that consists of multiple additional constraint interfaces is not even contemplated or remotely referred to. In this regard, Zuffante completely fails to describe the selection of multiple constraint interfaces. Similarly, Zuffante completely fails to describe the selection of an option to create a composite interface.

In addition to the above, the various elements of Applicants' claimed invention together provide operational advantages over Zuffante and Harrison. Further, Applicants' invention solves problems not recognized by Zuffante and Harrison.

Thus, Applicants submit that independent claims 1, 35, and 69, 2, 36, and 70 are allowable over Zuffante and Harrison. Further, dependent claims 3-7, 11-34, 37-41, 44-68, 71-75, and 78-102

are submitted to be allowable over Zuffante and Harrison in the same manner, because they are dependent on independent claims 1, 35, and 69, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 3-7, 11-34, 37-41, 44-68, 71-75, and 78-102recite additional novel elements not shown by Zuffante and Harrison.

V. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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ABSTRACT (REPLACEMENT)

One or more embodiments of the invention provide a method, apparatus, and article of manufacture for defining mating properties of a graphical component in a computer-implemented drawing program. An option to create a first constraint interface for a first geometric characteristic of a first component is initiated. In response to the initiation, a dialog window for specifying settings for the first constraint interface, regardless of whether a second constraint interface is currently displayed, is displayed. The settings define mating properties for how the first geometric characteristic of the first component mates with the second constraint interface. Once specified, the first constraint interface of the first geometric characteristic is persisted with the first component.